Item #24: Kiln

Emission Estimates

Date: 01-Jul-04

(Listed as item #24 on the "Campus Inventory" list).

Location: Art & Museum Building #28

EMISSIONS	Fuel	Maximum Equipment Capacity	EMISSION ESTIMATES: Emission Factors from EPA 42: Reference Table		calculated	following estimates based on Emission Factors: calculated	calculated
	Gas	MMBtu/hr 0.100		$lb_E/10^6$ scf	lb_E/MMBtu	lb_E/hr	ton_E/yr
CO			EPA 42 Table 1.4-1	84	0.082	8.24 E-03	3.61 E-02
NO_x			EPA 42 Table 1.4-1	100	0.098	9.80 E-03	4.29 E-02
SO_2			EPA 42 Table 1.4-2	0.60	0.00059	5.88 E-05	2.58 E-04
PM10			EPA 42 Table 1.4-2	7.60	0.0075	7.45 E-04	3.26 E-03
PM			EPA 42 Table 1.4-2	7.60	0.0075	7.45 E-04	3.26 E-03
Pb			EPA 42 Table 1.4-2	0.0005	4.90 E-07	4.90 E-08	2.15 E-07
VOC			EPA 42 Table 1.4-2	5.50	0.005	5.39 E-04	2.36 E-03
TOC			EPA 42 Table 1.4-2	11.00	0.011	1.08 E-03	4.72 E-03
2-Methylnaphthalene			EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	2.35 E-09	1.03 E-08
3-Methylchloranthrene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.76 E-10	7.73 E-10
7,12-Dimethylbenz(a)anthracite			EPA 42 Table 1.4-3	1.6 E-05	1.57 E-08	1.57 E-09	6.87 E-09
Acenaphthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.76 E-10	7.73 E-10
Acenaphthylene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.76 E-10	7.73 E-10
Anthracene			EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	2.35 E-10	1.03 E-09
Arsenic			EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	1.96 E-08	8.59 E-08
Barium			EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	4.31 E-07	1.89 E-06
Benzo(a)anthracene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.76 E-10	7.73 E-10
Benzene			EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	2.06 E-07	9.02 E-07
Benzo(a)pyrene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.18 E-10	5.15 E-10
Benzo(b)fluoranthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.76 E-10	7.73 E-10
Benzo(g,h,i)perylene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.18 E-10	5.15 E-10
Benzo(k)fluoranthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.76 E-10	7.73 E-10
Beryllium			EPA 42 Table 1.4-4	1.2 E-05	1.18 E-08	1.18 E-09	5.15 E-09
Butane			EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	2.06 E-04	9.02 E-04
Cadmium			EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	1.08 E-07	4.72 E-07
Chromium			EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	1.37 E-07	6.01 E-07
Chrysene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.76 E-10	7.73 E-10
Cobalt			EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	8.24 E-09	3.61 E-08
Copper			EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	8.33 E-08	3.65 E-07
Dibenzo(a,h)anthracene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.18 E-10	5.15 E-10
Dichlorobenzene			EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	1.18 E-07	5.15 E-07
Ethane			EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	3.04 E-04	1.33 E-03
Fluoranthene			EPA 42 Table 1.4-3	3.0 E-06	2.94 E-09	2.94 E-10	1.29 E-09
Fluorene			EPA 42 Table 1.4-3	2.8 E-06	2.75 E-09	2.75 E-10	1.20 E-09
Formaldehyde			EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	7.35 E-06	3.22 E-05
Hexane			EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	1.76 E-04	7.73 E-04
Indeno(1,2,3-cd)pyrene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.76 E-10	7.73 E-10
Manganese			EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	3.73 E-08	1.63 E-07
Mercury			EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07	2.55 E-08	1.12 E-07
Methane			EPA 42 Table 1.4-2	2.30	0.00225	2.25 E-04	9.88 E-04
Molybdenum			EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	1.08 E-07	4.72 E-07
Naphthalene			EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	5.98 E-08	2.62 E-07
Nickel			EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	2.06 E-07	9.02 E-07
Pentane			EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	2.55 E-04	1.12 E-03
Phenanathrene			EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	1.67 E-09	7.30 E-09
Propane			EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	1.57 E-04	6.87 E-04
Pyrene			EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	4.90 E-10	2.15 E-09
Selenium			EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	2.35 E-09	1.03 E-08
Toluene			EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	3.33 E-07	1.46 E-06
Vanadium			EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	2.25 E-07	9.88 E-07
Zinc			EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	2.84 E-06	1.25 E-05

Notes:

1. Emission factor for "Small Boilers" and "Uncontrolled".
2. Potential hours of operation (annual) = 8,760 hours/year
3. Actual hours of operation = 30 hours/year
4. Kiln used for foundry classes.
5. Identifier #K24.

Abbreviations used::

- MMBtu Million Btu
- hr Hours
- yr Years
- lb_E Pounds of emissions
- ton_E Tons of emissions

Emissions ISU Small Equip 6/24/2003
K24 1 of 1 @2:57PM
Syed

Item #25: Burnoff Furnace

Emission Estimates

Date: 01-Jul-04

(Listed as item #25 on the "Campus Inventory" list).

Location: Art & Museum Building #28

EMISSIONS	Fuel	Maximum Equipment Capacity		EMISSION ESTIMATES: Emission Factors from EPA 42: Reference Table			following estimates based on Emission Factors: calculated	calculated
			MMBtu/hr					
	Gas		0.200		$lb_E/10^6$ scf	lb_E/MMBtu	lb_E/hr	ton_E/yr
CO				EPA 42 Table 1.4-1	84	0.082	1.65 E-02	7.21 E-02
NO_x				EPA 42 Table 1.4-1	100	0.098	1.96 E-02	8.59 E-02
SO_2				EPA 42 Table 1.4-2	0.60	0.00059	1.18 E-04	5.15 E-04
PM10				EPA 42 Table 1.4-2	7.60	0.0075	1.49 E-03	6.53 E-03
PM				EPA 42 Table 1.4-2	7.60	0.0075	1.49 E-03	6.53 E-03
Pb				EPA 42 Table 1.4-2	0.0005	4.90 E-07	9.80 E-08	4.29 E-07
VOC				EPA 42 Table 1.4-2	5.50	0.005	1.08 E-03	4.72 E-03
TOC				EPA 42 Table 1.4-2	11.00	0.011	2.16 E-03	9.45 E-03
2-Methylnaphthalene				EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	4.71 E-09	2.06 E-08
3-Methylchloranthrene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	3.53 E-10	1.55 E-09
7,12-Dimethylbenz(a)anthracene				EPA 42 Table 1.4-3	1.6 E-05	1.57 E-08	3.14 E-09	1.37 E-08
Acenaphthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	3.53 E-10	1.55 E-09
Acenaphthylene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	3.53 E-10	1.55 E-09
Anthracene				EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	4.71 E-10	2.06 E-09
Arsenic				EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	3.92 E-08	1.72 E-07
Barium				EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	8.63 E-07	3.78 E-06
Benzo(a)anthracene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	3.53 E-10	1.55 E-09
Benzene				EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	4.12 E-07	1.80 E-06
Benzo(a)pyrene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	2.35 E-10	1.03 E-09
Benzo(b)fluoranthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	3.53 E-10	1.55 E-09
Benzo(g,h,i)perylene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	2.35 E-10	1.03 E-09
Benzo(k)fluoranthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	3.53 E-10	1.55 E-09
Beryllium				EPA 42 Table 1.4-4	1.2 E-05	1.18 E-08	2.35 E-09	1.03 E-08
Butane				EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	4.12 E-04	1.80 E-03
Cadmium				EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	2.16 E-07	9.45 E-07
Chromium				EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	2.75 E-07	1.20 E-06
Chrysene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	3.53 E-10	1.55 E-09
Cobalt				EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	1.65 E-08	7.21 E-08
Copper				EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	1.67 E-07	7.30 E-07
Dibenzo(a,h)anthracene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	2.35 E-10	1.03 E-09
Dichlorobenzene				EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	2.35 E-07	1.03 E-06
Ethane				EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	6.08 E-04	2.66 E-03
Fluoranthene				EPA 42 Table 1.4-3	3.0 E-06	2.94 E-09	5.88 E-10	2.58 E-09
Fluorene				EPA 42 Table 1.4-3	2.8 E-06	2.75 E-09	5.49 E-10	2.40 E-09
Formaldehyde				EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	1.47 E-05	6.44 E-05
Hexane				EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	3.53 E-04	1.55 E-03
Indeno(1,2,3-cd)pyrene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	3.53 E-10	1.55 E-09
Manganese				EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	7.45 E-08	3.26 E-07
Mercury				EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07	5.10 E-08	2.23 E-07
Methane				EPA 42 Table 1.4-2	2.30	0.00225	4.51 E-04	1.98 E-03
Molybdenum				EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	2.16 E-07	9.45 E-07
Naphthalene				EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	1.20 E-07	5.24 E-07
Nickel				EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	4.12 E-07	1.80 E-06
Pentane				EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	5.10 E-04	2.23 E-03
Phenanathrene				EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	3.33 E-09	1.46 E-08
Propane				EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	3.14 E-04	1.37 E-03
Pyrene				EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	9.80 E-10	4.29 E-09
Selenium				EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	4.71 E-09	2.06 E-08
Toluene				EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	6.67 E-07	2.92 E-06
Vanadium				EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	4.51 E-07	1.98 E-06
Zinc				EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	5.69 E-06	2.49 E-05

Notes:

1. Emission factor for "Small Boilers" and "Uncontrolled".
2. Potential hours of operation (annual) = 8,760 hours/year
3. Actual hours of operation = 300 hours/year
4. Furnace used for foundry classes.
5. Identifier #F25.

Abbreviations used::

- **MMBtu** Million Btu
- **hr** Hours
- **yr** Years
- **lb_E** Pounds of emissions
- **ton_E** Tons of emissions

Emissions ISU Small Equip 8/24/2003
F25 1 of 1 @2:57PM
Syed

Item #26: Melting furnace

Emission Estimates

Date: 01-Jul-04

(Listed as item #26 on the "Campus Inventory" list).

Location: Art & Museum Building #28

EMISSIONS	Fuel	Maximum Equipment Capacity		EMISSION ESTIMATES: Emission Factors from EPA 42: Reference Table		calculated	following estimates based on Emission Factors: calculated	calculated
	Gas		MMBtu/hr 0.100		$lb_E/10^6$ scf	lb_E/MMBtu	lb_E/hr	ton_E/yr
CO				EPA 42 Table 1.4-1	84	0.082	8.24 E-03	3.61 E-02
NO_x				EPA 42 Table 1.4-1	100	0.098	9.80 E-03	4.29 E-02
SO_2				EPA 42 Table 1.4-2	0.60	0.00059	5.88 E-05	2.58 E-04
PM10				EPA 42 Table 1.4-2	7.60	0.0075	7.45 E-04	3.26 E-03
PM				EPA 42 Table 1.4-2	7.60	0.0075	7.45 E-04	3.26 E-03
Pb				EPA 42 Table 1.4-2	0.0005	4.90 E-07	4.90 E-08	2.15 E-07
VOC				EPA 42 Table 1.4-2	5.50	0.005	5.39 E-04	2.36 E-03
TOC				EPA 42 Table 1.4-2	11.00	0.011	1.08 E-03	4.72 E-03
2-Methylnaphthalene				EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	2.35 E-09	1.03 E-08
3-Methylchloranthrene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.76 E-10	7.73 E-10
7,12-Dimethylbenz(a)anthracene				EPA 42 Table 1.4-3	1.6 E-05	1.57 E-08	1.57 E-09	6.87 E-09
Acenaphthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.76 E-10	7.73 E-10
Acenaphthylene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.76 E-10	7.73 E-10
Anthracene				EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	2.35 E-10	1.03 E-09
Arsenic				EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	1.96 E-08	8.59 E-08
Barium				EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	4.31 E-07	1.89 E-06
Benzo(a)anthracene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.76 E-10	7.73 E-10
Benzene				EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	2.06 E-07	9.02 E-07
Benzo(a)pyrene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.18 E-10	5.15 E-10
Benzo(b)fluoranthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.76 E-10	7.73 E-10
Benzo(g,h,i)perylene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.18 E-10	5.15 E-10
Benzo(k)fluoranthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.76 E-10	7.73 E-10
Beryllium				EPA 42 Table 1.4-4	1.2 E-05	1.18 E-08	1.18 E-09	5.15 E-09
Butane				EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	2.06 E-04	9.02 E-04
Cadmium				EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	1.08 E-07	4.72 E-07
Chromium				EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	1.37 E-07	6.01 E-07
Chrysene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.76 E-10	7.73 E-10
Cobalt				EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	8.24 E-09	3.61 E-08
Copper				EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	8.33 E-08	3.65 E-07
Dibenzo(a,h)anthracene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.18 E-10	5.15 E-10
Dichlorobenzene				EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	1.18 E-07	5.15 E-07
Ethane				EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	3.04 E-04	1.33 E-03
Fluoranthene				EPA 42 Table 1.4-3	3.0 E-06	2.94 E-09	2.94 E-10	1.29 E-09
Fluorene				EPA 42 Table 1.4-3	2.8 E-06	2.75 E-09	2.75 E-10	1.20 E-09
Formaldehyde				EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	7.35 E-06	3.22 E-05
Hexane				EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	1.76 E-04	7.73 E-04
Indeno(1,2,3-cd)pyrene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.76 E-10	7.73 E-10
Manganese				EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	3.73 E-08	1.63 E-07
Mercury				EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07	2.55 E-08	1.12 E-07
Methane				EPA 42 Table 1.4-2	2.30	0.00225	2.25 E-04	9.88 E-04
Molybdenum				EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	1.08 E-07	4.72 E-07
Naphthalene				EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	5.98 E-08	2.62 E-07
Nickel				EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	2.06 E-07	9.02 E-07
Pentane				EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	2.55 E-04	1.12 E-03
Phenanathrene				EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	1.67 E-09	7.30 E-09
Propane				EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	1.57 E-04	6.87 E-04
Pyrene				EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	4.90 E-10	2.15 E-09
Selenium				EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	2.35 E-09	1.03 E-08
Toluene				EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	3.33 E-07	1.46 E-06
Vanadium				EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	2.25 E-07	9.88 E-07
Zinc				EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	2.84 E-06	1.25 E-05

Notes:

1. Emission factor for "Small Boilers" and "Uncontrolled".
2. Potential hours of operation (annual) = 8,760 hours/year
3. Actual hours of operation = 100 hours/year
4. Furnace used for foundry classes.
5. Identifier #F26.

Abbreviations used::

- MMBtu Million Btu
- hr Hours
- yr Years
- lb_E Pounds of emissions
- ton_E Tons of emissions

Emissions ISU Small Equip 6/24/2003
F26 1 of 1 @2:57PM
Syed

Item #27: Boiler

Emission Estimates

Date: 01-Jul-04

(Listed as item #27 on the "Campus Inventory" list.)

Location: West Campus - Building #72

EMISSIONS	Fuel	Maximum Equipment Capacity	EMISSION ESTIMATES Emission Factors from EPA 42:			following estimates based on Emission Factors	
			Reference Table		calculated	calculated	calculated
	Gas	MMBtu/hr 0.876		$lb_E/10^6$ scf	lb_E/MMBtu	lb_E/hr	ton_E/yr
CO			EPA 42 Table 1.4-1	84	0.082	7.21 E-02	3.16 E-01
NO_x			EPA 42 Table 1.4-1	100	0.098	8.58 E-02	3.76 E-01
SO_2			EPA 42 Table 1.4-2	0.60	0.00059	5.15 E-04	2.25 E-03
PM10			EPA 42 Table 1.4-2	7.60	0.0075	6.52 E-03	2.86 E-02
PM			EPA 42 Table 1.4-2	7.60	0.0075	6.52 E-03	2.86 E-02
Pb			EPA 42 Table 1.4-2	0.0005	4.90 E-07	4.29 E-07	1.88 E-06
VOC			EPA 42 Table 1.4-2	5.50	0.005	4.72 E-03	2.07 E-02
TOC			EPA 42 Table 1.4-2	11.00	0.011	9.44 E-03	4.13 E-02
2-Methylnaphthalene			EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	2.06 E-08	9.02 E-08
3-Methylchloranthrene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.54 E-09	6.76 E-09
7,12-Dimethylbenz(a)anthracite			EPA 42 Table 1.4-3	1.6 E-05	1.57 E-08	1.37 E-08	6.01 E-08
Acenaphthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.54 E-09	6.76 E-09
Acenaphthylene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.54 E-09	6.76 E-09
Anthracene			EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	2.06 E-09	9.02 E-09
Arsenic			EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	1.72 E-07	7.51 E-07
Barium			EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	3.77 E-06	1.65 E-05
Benzo(a)anthracene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.54 E-09	6.76 E-09
Benzene			EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	1.80 E-06	7.89 E-06
Benzo(a)pyrene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.03 E-09	4.51 E-09
Benzo(b)fluoranthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.54 E-09	6.76 E-09
Benzo(g,h,i)perylene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.03 E-09	4.51 E-09
Benzo(k)fluoranthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.54 E-09	6.76 E-09
Beryllium			EPA 42 Table 1.4-4	1.2 E-05	1.18 E-08	1.03 E-08	4.51 E-08
Butane			EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	1.80 E-03	7.89 E-03
Cadmium			EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	9.44 E-07	4.13 E-06
Chromium			EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	1.20 E-06	5.26 E-06
Chrysene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.54 E-09	6.76 E-09
Cobalt			EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	7.21 E-08	3.16 E-07
Copper			EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	7.29 E-07	3.19 E-06
Dibenzo(a,h)anthracene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.03 E-09	4.51 E-09
Dichlorobenzene			EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	1.03 E-06	4.51 E-06
Ethane			EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	2.66 E-03	1.16 E-02
Fluoranthene			EPA 42 Table 1.4-3	3.0 E-06	2.94 E-09	2.57 E-09	1.13 E-08
Fluorene			EPA 42 Table 1.4-3	2.8 E-06	2.75 E-09	2.40 E-09	1.05 E-08
Formaldehyde			EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	6.43 E-05	2.82 E-04
Hexane			EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	1.54 E-03	6.76 E-03
Indeno(1,2,3-cd)pyrene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.54 E-09	6.76 E-09
Manganese			EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	3.26 E-07	1.43 E-06
Mercury			EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07	2.23 E-07	9.77 E-07
Methane			EPA 42 Table 1.4-2	2.30	0.00225	1.97 E-03	8.64 E-03
Molybdenum			EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	9.44 E-07	4.13 E-06
Naphthalene			EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	5.23 E-07	2.29 E-06
Nickel			EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	1.80 E-06	7.89 E-06
Pentane			EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	2.23 E-03	9.77 E-03
Phenanathrene			EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	1.46 E-08	6.39 E-08
Propane			EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	1.37 E-03	6.01 E-03
Pyrene			EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	4.29 E-09	1.88 E-08
Selenium			EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	2.06 E-08	9.02 E-08
Toluene			EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	2.92 E-06	1.28 E-05
Vanadium			EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	1.97 E-06	8.64 E-06
Zinc			EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	2.49 E-05	1.09 E-04

Notes:

1 Emission factor for "Small Boilers" and "Uncontrolled".
2 Potential hours of operation of boiler (annual) = 8,760 hours/year
3 Actual hours of operation of boiler (used only as a backup boiler) = 10 hours/year
4 Boiler has not been used in the last two years.
5 Boiler used for hot water.
6 Identifier #B27.

Abbreviations used::

MMBtu Million Btu
hr Hours
yr Years
lb_E Pounds of emissions
ton_E Tons of emissions

Emissions ISU Small Equip 6/24/2003
B27 1 of 1 @2:57PM
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Item #28: Boiler

Emission Estimates

Date: 01-Jul-04

(Listed as item #28 on the "Campus Inventory" list.)

Location: 5th Street Apartments - Building #70

EMISSIONS	Fuel	Maximum Equipment Capacity	EMISSION ESTIMATES Emission Factors from EPA 42:			following estimates based on Emission Factors	
			Reference Table		calculated	calculated	calculated
	Gas	MMBtu/hr 0.420		$lb_E/10^6$ scf	lb_E/MMBtu	lb_E/hr	ton_E/yr
CO			EPA 42 Table 1.4-1	84	0.082	3.46 E-02	1.51 E-01
NO_x			EPA 42 Table 1.4-1	100	0.098	4.12 E-02	1.80 E-01
SO_2			EPA 42 Table 1.4-2	0.60	0.00059	2.47 E-04	1.08 E-03
PM10			EPA 42 Table 1.4-2	7.60	0.0075	3.13 E-03	1.37 E-02
PM			EPA 42 Table 1.4-2	7.60	0.0075	3.13 E-03	1.37 E-02
Pb			EPA 42 Table 1.4-2	0.0005	4.90 E-07	2.06 E-07	9.02 E-07
VOC			EPA 42 Table 1.4-2	5.50	0.005	2.26 E-03	9.92 E-03
TOC			EPA 42 Table 1.4-2	11.00	0.011	4.53 E-03	1.98 E-02
2-Methylnaphthalene			EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	9.88 E-09	4.33 E-08
3-Methylchloranthrene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.41 E-10	3.25 E-09
7,12-Dimethylbenz(a)anthracite			EPA 42 Table 1.4-3	1.6 E-05	1.57 E-08	6.59 E-09	2.89 E-08
Acenaphthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.41 E-10	3.25 E-09
Acenaphthylene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.41 E-10	3.25 E-09
Anthracene			EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	9.88 E-10	4.33 E-09
Arsenic			EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	8.24 E-08	3.61 E-07
Barium			EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	1.81 E-06	7.94 E-06
Benzo(a)anthracene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.41 E-10	3.25 E-09
Benzene			EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	8.65 E-07	3.79 E-06
Benzo(a)pyrene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	4.94 E-10	2.16 E-09
Benzo(b)fluoranthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.41 E-10	3.25 E-09
Benzo(g,h,i)perylene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	4.94 E-10	2.16 E-09
Benzo(k)fluoranthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.41 E-10	3.25 E-09
Beryllium			EPA 42 Table 1.4-4	1.2 E-05	1.18 E-08	4.94 E-09	2.16 E-08
Butane			EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	8.65 E-04	3.79 E-03
Cadmium			EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	4.53 E-07	1.98 E-06
Chromium			EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	5.76 E-07	2.52 E-06
Chrysene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.41 E-10	3.25 E-09
Cobalt			EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	3.46 E-08	1.51 E-07
Copper			EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	3.50 E-07	1.53 E-06
Dibenzo(a,h)anthracene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	4.94 E-10	2.16 E-09
Dichlorobenzene			EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	4.94 E-07	2.16 E-06
Ethane			EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	1.28 E-03	5.59 E-03
Fluoranthene			EPA 42 Table 1.4-3	3.0 E-06	2.94 E-09	1.24 E-09	5.41 E-09
Fluorene			EPA 42 Table 1.4-3	2.8 E-06	2.75 E-09	1.15 E-09	5.05 E-09
Formaldehyde			EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	3.09 E-05	1.35 E-04
Hexane			EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	7.41 E-04	3.25 E-03
Indeno(1,2,3-cd)pyrene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.41 E-10	3.25 E-09
Manganese			EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	1.56 E-07	6.85 E-07
Mercury			EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07	1.07 E-07	4.69 E-07
Methane			EPA 42 Table 1.4-2	2.30	0.00225	9.47 E-04	4.15 E-03
Molybdenum			EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	4.53 E-07	1.98 E-06
Naphthalene			EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	2.51 E-07	1.10 E-06
Nickel			EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	8.65 E-07	3.79 E-06
Pentane			EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	1.07 E-03	4.69 E-03
Phenanthrene			EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	7.00 E-09	3.07 E-08
Propane			EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	6.59 E-04	2.89 E-03
Pyrene			EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	2.06 E-09	9.02 E-09
Selenium			EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	9.88 E-09	4.33 E-08
Toluene			EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	1.40 E-06	6.13 E-06
Vanadium			EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	9.47 E-07	4.15 E-06
Zinc			EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	1.19 E-05	5.23 E-05

Notes:

1 Emission factor for "Small Boilers" and "Uncontrolled".
2 Potential hours of operation of boiler (annual) = 8,760 hours/year
3 Actual hours of operation of boiler (winter: Sept 1 to May 31) = 273 days/year x 24 hours/day 6,552 hours/year
4 Boiler used during winter for hot water.
5 Identifier #B28.

Abbreviations used::

MMBtu Million Btu
hr Hours
yr Years
lb_E Pounds of emissions
ton_E Tons of emissions

Emissions ISU Small Equip 6/24/2003
B28 1 of 1 @2:57PM
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Item #29: Boiler

Emission Estimates

Date: 01-Jul-04

(Listed as item #29 on the "Campus Inventory" list.)

Location: Schubert - Building #56

EMISSIONS	Fuel	Maximum Equipment Capacity	EMISSION ESTIMATES: Emission Factors from EPA 42: Reference Table			following estimates based on Emission Factors: calculated	calculated
	Gas	MMBtu/hr 0.400		$lb_E/10^6$ scf	lb_E/MMBtu	lb_E/hr	ton_E/yr
CO			EPA 42 Table 1.4-1	84	0.082	3.29 E-02	1.44 E-01
NO_x			EPA 42 Table 1.4-1	100	0.098	3.92 E-02	1.72 E-01
SO_2			EPA 42 Table 1.4-2	0.60	0.00059	2.35 E-04	1.03 E-03
PM10			EPA 42 Table 1.4-2	7.60	0.0075	2.98 E-03	1.31 E-02
PM			EPA 42 Table 1.4-2	7.60	0.0075	2.98 E-03	1.31 E-02
Pb			EPA 42 Table 1.4-2	0.0005	4.90 E-07	1.96 E-07	8.59 E-07
VOC			EPA 42 Table 1.4-2	5.50	0.005	2.16 E-03	9.45 E-03
TOC			EPA 42 Table 1.4-2	11.00	0.011	4.31 E-03	1.89 E-02
2-Methylnaphthalene			EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	9.41 E-09	4.12 E-08
3-Methylchloranthrene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
7,12-Dimethylbenz(a)anthracene			EPA 42 Table 1.4-3	1.6 E-05	1.57 E-08	6.27 E-09	2.75 E-08
Acenaphthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
Acenaphthylene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
Anthracene			EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	9.41 E-10	4.12 E-09
Arsenic			EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	7.84 E-08	3.44 E-07
Barium			EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	1.73 E-06	7.56 E-06
Benzo(a)anthracene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
Benzene			EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	8.24 E-07	3.61 E-06
Benzo(a)pyrene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	4.71 E-10	2.06 E-09
Benzo(b)fluoranthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
Benzo(g,h,i)perylene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	4.71 E-10	2.06 E-09
Benzo(k)fluoranthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
Beryllium			EPA 42 Table 1.4-4	1.2 E-05	1.18 E-08	4.71 E-09	2.06 E-08
Butane			EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	8.24 E-04	3.61 E-03
Cadmium			EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	4.31 E-07	1.89 E-06
Chromium			EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	5.49 E-07	2.40 E-06
Chrysene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
Cobalt			EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	3.29 E-08	1.44 E-07
Copper			EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	3.33 E-07	1.46 E-06
Dibenzo(a,h)anthracene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	4.71 E-10	2.06 E-09
Dichlorobenzene			EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	4.71 E-07	2.06 E-06
Ethane			EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	1.22 E-03	5.32 E-03
Fluoranthene			EPA 42 Table 1.4-3	3.0 E-06	2.94 E-09	1.18 E-09	5.15 E-09
Fluorene			EPA 42 Table 1.4-3	2.8 E-06	2.75 E-09	1.10 E-09	4.81 E-09
Formaldehyde			EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	2.94 E-05	1.29 E-04
Hexane			EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	7.06 E-04	3.09 E-03
Indeno(1,2,3-cd)pyrene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
Manganese			EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	1.49 E-07	6.53 E-07
Mercury			EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07	1.02 E-07	4.47 E-07
Methane			EPA 42 Table 1.4-2	2.30	0.00225	9.02 E-04	3.95 E-03
Molybdenum			EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	4.31 E-07	1.89 E-06
Naphthalene			EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	2.39 E-07	1.05 E-06
Nickel			EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	8.24 E-07	3.61 E-06
Pentane			EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	1.02 E-03	4.47 E-03
Phenanathrene			EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	6.67 E-09	2.92 E-08
Propane			EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	6.27 E-04	2.75 E-03
Pyrene			EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	1.96 E-09	8.59 E-09
Selenium			EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	9.41 E-09	4.12 E-08
Toluene			EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	1.33 E-06	5.84 E-06
Vanadium			EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	9.02 E-07	3.95 E-06
Zinc			EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	1.14 E-05	4.98 E-05

Notes:

1. Emission factor for "Small Boilers" and "Uncontrolled".
2. Actual hours of operation of boilers (all year) = 365 days/year x 24 hours/day = 8,760 hours/year
3. Boiler used for heating.
4. Identifier #B29.

Abbreviations used::

- MMBtu Million Btu
- hr Hours
- yr Years
- lb_E Pounds of emissions
- ton_E Tons of emissions

Emissions ISU Small Equip 8/24/2003
B29 1 of 1 @2:57PM
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Item #30: Boiler

Emission Estimates

Date: 01-Jul-04

(Listed as item #30 on the "Campus Inventory" list.)

Location: Schubert - Building #56

EMISSIONS	Fuel	Maximum Equipment Capacity	EMISSION ESTIMATES Emission Factors from EPA 42:		following estimates based on Emission Factors	
			Reference Table	calculated	calculated	calculated
	Gas	MMBtu/hr 0.400		$lb_E/10^6$ scf	lb_E/MMBtu	lb_E/hr	ton_E/yr
CO			EPA 42 Table 1.4-1	84	0.082	3.29 E-02	1.44 E-01
NO_x			EPA 42 Table 1.4-1	100	0.098	3.92 E-02	1.72 E-01
SO_2			EPA 42 Table 1.4-2	0.60	0.00059	2.35 E-04	1.03 E-03
PM10			EPA 42 Table 1.4-2	7.60	0.0075	2.98 E-03	1.31 E-02
PM			EPA 42 Table 1.4-2	7.60	0.0075	2.98 E-03	1.31 E-02
Pb			EPA 42 Table 1.4-2	0.0005	4.90 E-07	1.96 E-07	8.59 E-07
VOC			EPA 42 Table 1.4-2	5.50	0.005	2.16 E-03	9.45 E-03
TOC			EPA 42 Table 1.4-2	11.00	0.011	4.31 E-03	1.89 E-02
2-Methylnaphthalene			EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	9.41 E-09	4.12 E-08
3-Methylchloranthrene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
7,12-Dimethylbenz(a)anthracene			EPA 42 Table 1.4-3	1.6 E-05	1.57 E-08	6.27 E-09	2.75 E-08
Acenaphthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
Acenaphthylene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
Anthracene			EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	9.41 E-10	4.12 E-09
Arsenic			EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	7.84 E-08	3.44 E-07
Barium			EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	1.73 E-06	7.56 E-06
Benzo(a)anthracene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
Benzene			EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	8.24 E-07	3.61 E-06
Benzo(a)pyrene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	4.71 E-10	2.06 E-09
Benzo(b)fluoranthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
Benzo(g,h,i)perylene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	4.71 E-10	2.06 E-09
Benzo(k)fluoranthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
Beryllium			EPA 42 Table 1.4-4	1.2 E-05	1.18 E-08	4.71 E-09	2.06 E-08
Butane			EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	8.24 E-04	3.61 E-03
Cadmium			EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	4.31 E-07	1.89 E-06
Chromium			EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	5.49 E-07	2.40 E-06
Chrysene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
Cobalt			EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	3.29 E-08	1.44 E-07
Copper			EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	3.33 E-07	1.46 E-06
Dibenzo(a,h)anthracene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	4.71 E-10	2.06 E-09
Dichlorobenzene			EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	4.71 E-07	2.06 E-06
Ethane			EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	1.22 E-03	5.32 E-03
Fluoranthene			EPA 42 Table 1.4-3	3.0 E-06	2.94 E-09	1.18 E-09	5.15 E-09
Fluorene			EPA 42 Table 1.4-3	2.8 E-06	2.75 E-09	1.10 E-09	4.81 E-09
Formaldehyde			EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	2.94 E-05	1.29 E-04
Hexane			EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	7.06 E-04	3.09 E-03
Indeno(1,2,3-cd)pyrene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	7.06 E-10	3.09 E-09
Manganese			EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	1.49 E-07	6.53 E-07
Mercury			EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07	1.02 E-07	4.47 E-07
Methane			EPA 42 Table 1.4-2	2.30	0.00225	9.02 E-04	3.95 E-03
Molybdenum			EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	4.31 E-07	1.89 E-06
Naphthalene			EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	2.39 E-07	1.05 E-06
Nickel			EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	8.24 E-07	3.61 E-06
Pentane			EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	1.02 E-03	4.47 E-03
Phenanathrene			EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	6.67 E-09	2.92 E-08
Propane			EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	6.27 E-04	2.75 E-03
Pyrene			EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	1.96 E-09	8.59 E-09
Selenium			EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	9.41 E-09	4.12 E-08
Toluene			EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	1.33 E-06	5.84 E-06
Vanadium			EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	9.02 E-07	3.95 E-06
Zinc			EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	1.14 E-05	4.98 E-05

Notes:

1. Emission factor for "Small Boilers" and "Uncontrolled".
2. Actual hours of operation of boilers (all year) = 365 days/year x 24 hours/day = 8,760 hours/year
3. Boiler used for heating.
4. Identifier #B30

Abbreviations used::

- MMBtu Million Btu
- hr Hours
- yr Years
- lb_E Pounds of emissions
- ton_E Tons of emissions

Emissions ISU Small Equip 6/24/2003
B30 1 of 1 @2:57PM
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Item #31: Boiler

Emission Estimates

Date: 01-Jul-04

(Listed as item #31 on the "Campus Inventory" list.)

Location: RFC Ph. II - Building #48

EMISSIONS	Fuel	Maximum Equipment Capacity	Emission Factors from EPA 42: Reference Table		calculated	EMISSION ESTIMATES following estimates based on Emission Factors: calculated	calculated
	Gas	MMBtu/hr 0.169		$lb_E/10^6$ scf	lb_E/MMBtu	lb_E/hr	ton_E/yr
CO			EPA 42 Table 1.4-1	84	0.082	1.39 E-02	6.10 E-02
NO_x			EPA 42 Table 1.4-1	100	0.098	1.66 E-02	7.26 E-02
SO_2			EPA 42 Table 1.4-2	0.60	0.00059	9.94 E-05	4.35 E-04
PM10			EPA 42 Table 1.4-2	7.60	0.0075	1.26 E-03	5.52 E-03
PM			EPA 42 Table 1.4-2	7.60	0.0075	1.26 E-03	5.52 E-03
Pb			EPA 42 Table 1.4-2	0.0005	4.90 E-07	8.28 E-08	3.63 E-07
VOC			EPA 42 Table 1.4-2	5.50	0.005	9.11 E-04	3.99 E-03
TOC			EPA 42 Table 1.4-2	11.00	0.011	1.82 E-03	7.98 E-03
2-Methylnaphthalene			EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	3.98 E-09	1.74 E-08
3-Methylchloranthrene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	2.98 E-10	1.31 E-09
7,12-Dimethylbenz(a)anthracene			EPA 42 Table 1.4-3	1.6 E-05	1.57 E-08	2.65 E-09	1.16 E-08
Acenaphthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	2.98 E-10	1.31 E-09
Acenaphthylene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	2.98 E-10	1.31 E-09
Anthracene			EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	3.98 E-10	1.74 E-09
Arsenic			EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	3.31 E-08	1.45 E-07
Barium			EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	7.29 E-07	3.19 E-06
Benzo(a)anthracene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	2.98 E-10	1.31 E-09
Benzene			EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	3.48 E-07	1.52 E-06
Benzo(a)pyrene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.99 E-10	8.71 E-10
Benzo(b)fluoranthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	2.98 E-10	1.31 E-09
Benzo(g,h,i)perylene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.99 E-10	8.71 E-10
Benzo(k)fluoranthene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	2.98 E-10	1.31 E-09
Beryllium			EPA 42 Table 1.4-4	1.2 E-05	1.18 E-08	1.99 E-09	8.71 E-09
Butane			EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	3.48 E-04	1.52 E-03
Cadmium			EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	1.82 E-07	7.98 E-07
Chromium			EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	2.32 E-07	1.02 E-06
Chrysene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	2.98 E-10	1.31 E-09
Cobalt			EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	1.39 E-08	6.10 E-08
Copper			EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	1.41 E-07	6.17 E-07
Dibenzo(a,h)anthracene			EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.99 E-10	8.71 E-10
Dichlorobenzene			EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	1.99 E-07	8.71 E-07
Ethane			EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	5.14 E-04	2.25 E-03
Fluoranthene			EPA 42 Table 1.4-3	3.0 E-06	2.94 E-09	4.97 E-10	2.18 E-09
Fluorene			EPA 42 Table 1.4-3	2.8 E-06	2.75 E-09	4.64 E-10	2.03 E-09
Formaldehyde			EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	1.24 E-05	5.44 E-05
Hexane			EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	2.98 E-04	1.31 E-03
Indeno(1,2,3-cd)pyrene			EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	2.98 E-10	1.31 E-09
Manganese			EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	6.30 E-08	2.76 E-07
Mercury			EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07	4.31 E-08	1.89 E-07
Methane			EPA 42 Table 1.4-2	2.30	0.00225	3.81 E-04	1.67 E-03
Molybdenum			EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	1.82 E-07	7.98 E-07
Naphthalene			EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	1.01 E-07	4.43 E-07
Nickel			EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	3.48 E-07	1.52 E-06
Pentane			EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	4.31 E-04	1.89 E-03
Phenanathrene			EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	2.82 E-09	1.23 E-08
Propane			EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	2.65 E-04	1.16 E-03
Pyrene			EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	8.28 E-10	3.63 E-09
Selenium			EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	3.98 E-09	1.74 E-08
Toluene			EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	5.63 E-07	2.47 E-06
Vanadium			EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	3.81 E-07	1.67 E-06
Zinc			EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	4.80 E-06	2.10 E-05

Notes:

1. Emission factor for "Small Boilers" and "Uncontrolled".
2. Potential hours of operation of boiler (annual) = 8,760 hours/year
3. Actual hours of operation of boiler (11 months) = 335 days/year x 24 hours/day = 8,040 hours/year
4. Boiler used for hot water for cosmetology department.
5. Identifier #B31.

Abbreviations used::

- **MMBtu** Million Btu
- **hr** Hours
- **yr** Years
- **lb_E** Pounds of emissions
- **ton_E** Tons of emissions

Emissions ISU Small Equip 6/24/2003
B31 1 of 1 @2:57PM
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Item #32: Boiler

Emission Estimates

Date: 01-Jul-04

(Listed as item #32 on the "Campus Inventory" list.)

Location: RFC Ph. III - Building #48

EMISSIONS	Fuel	Maximum Equipment Capacity		EMISSION ESTIMATES Emission Factors from EPA 42:			following estimates based on Emission Factors	
				Reference Table		calculated	calculated	calculated
	Gas	2 boilers	MMBtu/hr 0.548		$lb_E/10^6$ scf	lb_E/MMBtu	lb_E/hr	ton_E/yr
CO		x 0.274 MMBtu/hr		EPA 42 Table 1.4-1	84	0.082	4.51 E-02	1.98 E-01
NO_x		=0.548 MMBtu/hr		EPA 42 Table 1.4-1	100	0.098	5.37 E-02	2.35 E-01
SO_2				EPA 42 Table 1.4-2	0.60	0.00059	3.22 E-04	1.41 E-03
PM10				EPA 42 Table 1.4-2	7.60	0.0075	4.08 E-03	1.79 E-02
PM				EPA 42 Table 1.4-2	7.60	0.0075	4.08 E-03	1.79 E-02
Pb				EPA 42 Table 1.4-2	0.0005	4.90 E-07	2.69 E-07	1.18 E-06
VOC				EPA 42 Table 1.4-2	5.50	0.005	2.95 E-03	1.29 E-02
TOC				EPA 42 Table 1.4-2	11.00	0.011	5.91 E-03	2.59 E-02
2-Methylnaphthalene				EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	1.29 E-08	5.65 E-08
3-Methylchloranthrene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	9.67 E-10	4.24 E-09
7,12-Dimethylbenz(a)anthracene				EPA 42 Table 1.4-3	1.6 E-05	1.57 E-08	8.60 E-09	3.77 E-08
Acenaphthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	9.67 E-10	4.24 E-09
Acenaphthylene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	9.67 E-10	4.24 E-09
Anthracene				EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	1.29 E-09	5.65 E-09
Arsenic				EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	1.07 E-07	4.71 E-07
Barium				EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	2.36 E-06	1.04 E-05
Benzo(a)anthracene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	9.67 E-10	4.24 E-09
Benzene				EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	1.13 E-06	4.94 E-06
Benzo(a)pyrene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	6.45 E-10	2.82 E-09
Benzo(b)fluoranthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	9.67 E-10	4.24 E-09
Benzo(g,h,i)perylene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	6.45 E-10	2.82 E-09
Benzo(k)fluoranthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	9.67 E-10	4.24 E-09
Beryllium				EPA 42 Table 1.4-4	1.2 E-05	1.18 E-08	6.45 E-09	2.82 E-08
Butane				EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	1.13 E-03	4.94 E-03
Cadmium				EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	5.91 E-07	2.59 E-06
Chromium				EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	7.52 E-07	3.29 E-06
Chrysene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	9.67 E-10	4.24 E-09
Cobalt				EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	4.51 E-08	1.98 E-07
Copper				EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	4.57 E-07	2.00 E-06
Dibenzo(a,h)anthracene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	6.45 E-10	2.82 E-09
Dichlorobenzene				EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	6.45 E-07	2.82 E-06
Ethane				EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	1.67 E-03	7.29 E-03
Fluoranthene				EPA 42 Table 1.4-3	3.0 E-06	2.94 E-09	1.61 E-09	7.06 E-09
Fluorene				EPA 42 Table 1.4-3	2.8 E-06	2.75 E-09	1.50 E-09	6.59 E-09
Formaldehyde				EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	4.03 E-05	1.76 E-04
Hexane				EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	9.67 E-04	4.24 E-03
Indeno(1,2,3-cd)pyrene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	9.67 E-10	4.24 E-09
Manganese				EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	2.04 E-07	8.94 E-07
Mercury				EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07	1.40 E-07	6.12 E-07
Methane				EPA 42 Table 1.4-2	2.30	0.00225	1.24 E-03	5.41 E-03
Molybdenum				EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	5.91 E-07	2.59 E-06
Naphthalene				EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	3.28 E-07	1.44 E-06
Nickel				EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	1.13 E-06	4.94 E-06
Pentane				EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	1.40 E-03	6.12 E-03
Phenanathrene				EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	9.13 E-09	4.00 E-08
Propane				EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	8.60 E-04	3.77 E-03
Pyrene				EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	2.69 E-09	1.18 E-08
Selenium				EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	1.29 E-08	5.65 E-08
Toluene				EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	1.83 E-06	8.00 E-06
Vanadium				EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	1.24 E-06	5.41 E-06
Zinc				EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	1.56 E-05	6.82 E-05

Notes:

1. Emission factor for "Small Boilers" and "Uncontrolled".
2. Actual hours of operation of boiler (all year) = 365 days/year x 24 hours/day = 8,760 hours/year
3. Boiler used for hot water.
4. Identifier #B32.

Abbreviations used::

- MMBtu Million Btu
- hr Hours
- yr Years
- lb_E Pounds of emissions
- ton_E Tons of emissions

Emissions ISU Small Equip 6/24/2003
B32 1 of 1 @2:57PM
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Item #33: Boilers

Emission Estimates

Date: 01-Jul-04

(Listed as item #33 on the "Campus Inventory" list.)

Location: Performing Arts Center Building #88

EMISSIONS	Fuel	Maximum Equipment Capacity		EMISSION ESTIMATES Emission Factors from EPA 42:			following estimates based on Emission Factors	
				Reference Table		calculated	calculated	calculated
	Gas	Total of 4 boilers;	MMBtu/hr 4.960		$lb_E/10^6$ scf	lb_E/MMBtu	lb_E/hr	ton_E/yr
CO		each boiler with		EPA 42 Table 1.4-1	84	0.082	4.08 E-01	1.79 E+00
NO_X		an output of		EPA 42 Table 1.4-1	100	0.098	4.86 E-01	2.13 E+00
SO_X		2.07 MMBtu/hr;		EPA 42 Table 1.4-2	0.60	0.00059	2.92 E-03	1.28 E-02
PM10		Firing rate = 60%		EPA 42 Table 1.4-2	7.60	0.0075	3.70 E-02	1.62 E-01
PM		=60%x2.07=1.24		EPA 42 Table 1.4-2	7.60	0.0075	3.70 E-02	1.62 E-01
Pb		For 4 boilers:		EPA 42 Table 1.4-2	0.0005	4.90 E-07	2.43 E-06	1.06 E-05
VOC		=4x1.24 MMBtu/hr		EPA 42 Table 1.4-2	5.50	0.005	2.67 E-02	1.17 E-01
TOC		=4.96 MMBtu/hr		EPA 42 Table 1.4-2	11.00	0.011	5.35 E-02	2.34 E-01
2-Methylnaphthalene				EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	1.17 E-07	5.11 E-07
3-Methylchloranthrene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	8.75 E-09	3.83 E-08
7,12-Dimethylbenz(a)anthracene				EPA 42 Table 1.4-3	1.6 E-05	1.57 E-08	7.78 E-08	3.41 E-07
Acenaphthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	8.75 E-09	3.83 E-08
Acenaphthylene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	8.75 E-09	3.83 E-08
Anthracene				EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	1.17 E-08	5.11 E-08
Arsenic				EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	9.73 E-07	4.26 E-06
Barium				EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	2.14 E-05	9.37 E-05
Benzo(a)anthracene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	8.75 E-09	3.83 E-08
Benzene				EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	1.02 E-05	4.47 E-05
Benzo(a)pyrene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	5.84 E-09	2.56 E-08
Benzo(b)fluoranthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	8.75 E-09	3.83 E-08
Benzo(g,h,i)perylene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	5.84 E-09	2.56 E-08
Benzo(k)fluoranthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	8.75 E-09	3.83 E-08
Beryllium				EPA 42 Table 1.4-4	1.2 E-05	1.18 E-08	5.84 E-08	2.56 E-07
Butane				EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	1.02 E-02	4.47 E-02
Cadmium				EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	5.35 E-06	2.34 E-05
Chromium				EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	6.81 E-06	2.98 E-05
Chrysene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	8.75 E-09	3.83 E-08
Cobalt				EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	4.08 E-07	1.79 E-06
Copper				EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	4.13 E-06	1.81 E-05
Dibenzo(a,h)anthracene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	5.84 E-09	2.56 E-08
Dichlorobenzene				EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	5.84 E-06	2.56 E-05
Ethane				EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	1.51 E-02	6.60 E-02
Fluoranthene				EPA 42 Table 1.4-3	3.0 E-06	2.94 E-09	1.46 E-08	6.39 E-08
Fluorene				EPA 42 Table 1.4-3	2.8 E-06	2.75 E-09	1.36 E-08	5.96 E-08
Formaldehyde				EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	3.65 E-04	1.60 E-03
Hexane				EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	8.75 E-03	3.83 E-02
Indeno(1,2,3-cd)pyrene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	8.75 E-09	3.83 E-08
Manganese				EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	1.85 E-06	8.09 E-06
Mercury				EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07	1.26 E-06	5.54 E-06
Methane				EPA 42 Table 1.4-2	2.30	0.00225	1.12 E-02	4.90 E-02
Molybdenum				EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	5.35 E-06	2.34 E-05
Naphthalene				EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	2.97 E-06	1.30 E-05
Nickel				EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	1.02 E-05	4.47 E-05
Pentane				EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	1.26 E-02	5.54 E-02
Phenanathrene				EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	8.27 E-08	3.62 E-07
Propane				EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	7.78 E-03	3.41 E-02
Pyrene				EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	2.43 E-08	1.06 E-07
Selenium				EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	1.17 E-07	5.11 E-07
Toluene				EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	1.65 E-05	7.24 E-05
Vanadium				EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	1.12 E-05	4.90 E-05
Zinc				EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	1.41 E-04	6.18 E-04

Notes:

1. Emission factor for "Small Boilers" and "Uncontrolled".
2. Potential hours of operation of boiler (annual) = 8,760 hours/year
3. Actual hours of operation of boiler (winter: Sept 1 to May 31) = 273 days/year x 24 hours/day = 8,552 hours/year
4. Boilers used during winter for heating.
5. Identifier #B33.

Abbreviations used::

- MMBtu Million Btu
- hr Hours
- yr Years
- lb_E Pounds of emissions
- ton_E Tons of emissions

Emissions ISU Small Equip 8/24/2003
B33 1 of 1 @2:57PM
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Item #34: Boiler

Emission Estimates

Date: 01-Jul-04

(Listed as Item #34 on the "Campus Inventory" list.)

Location: Performing Arts Center Building #88

EMISSIONS	Fuel	Maximum Equipment Capacity		EMISSION ESTIMATES: Emission Factors from EPA 42: Reference Table			following estimates based on Emission Factors: calculated	calculated
	Gas		MMBtu/hr 0.990		$lb_E/10^6$ scf	lb_E/MMBtu	lb_E/hr	ton_E/yr
CO				EPA 42 Table 1.4-1	84	0.082	8.15 E-02	3.57 E-01
NO_x				EPA 42 Table 1.4-1	100	0.098	9.71 E-02	4.25 E-01
SO_2				EPA 42 Table 1.4-2	0.60	0.00059	5.82 E-04	2.55 E-03
PM10				EPA 42 Table 1.4-2	7.60	0.0075	7.38 E-03	3.23 E-02
PM				EPA 42 Table 1.4-2	7.60	0.0075	7.38 E-03	3.23 E-02
Pb				EPA 42 Table 1.4-2	0.0005	4.90 E-07	4.85 E-07	2.13 E-06
VOC				EPA 42 Table 1.4-2	5.50	0.005	5.34 E-03	2.34 E-02
TOC				EPA 42 Table 1.4-2	11.00	0.011	1.07 E-02	4.68 E-02
2-Methylnaphthalene				EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	2.33 E-08	1.02 E-07
3-Methylchloranthrene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.75 E-09	7.65 E-09
7,12-Dimethylbenz(a)anthracene				EPA 42 Table 1.4-3	1.6 E-05	1.57 E-08	1.55 E-08	6.80 E-08
Acenaphthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.75 E-09	7.65 E-09
Acenaphthylene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.75 E-09	7.65 E-09
Anthracene				EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	2.33 E-09	1.02 E-08
Arsenic				EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	1.94 E-07	8.50 E-07
Barium				EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	4.27 E-06	1.87 E-05
Benzo(a)anthracene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.75 E-09	7.65 E-09
Benzene				EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	2.04 E-06	8.93 E-06
Benzo(a)pyrene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.16 E-09	5.10 E-09
Benzo(b)fluoranthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.75 E-09	7.65 E-09
Benzo(g,h,i)perylene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.16 E-09	5.10 E-09
Benzo(k)fluoranthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.75 E-09	7.65 E-09
Beryllium				EPA 42 Table 1.4-4	1.2 E-05	1.18 E-08	1.16 E-08	5.10 E-08
Butane				EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	2.04 E-03	8.93 E-03
Cadmium				EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	1.07 E-06	4.68 E-06
Chromium				EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	1.36 E-06	5.95 E-06
Chrysene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.75 E-09	7.65 E-09
Cobalt				EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	8.15 E-08	3.57 E-07
Copper				EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	8.25 E-07	3.61 E-06
Dibenzo(a,h)anthracene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	1.16 E-09	5.10 E-09
Dichlorobenzene				EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	1.16 E-06	5.10 E-06
Ethane				EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	3.01 E-03	1.32 E-02
Fluoranthene				EPA 42 Table 1.4-3	3.0 E-06	2.94 E-09	2.91 E-09	1.28 E-08
Fluorene				EPA 42 Table 1.4-3	2.8 E-06	2.75 E-09	2.72 E-09	1.19 E-08
Formaldehyde				EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	7.28 E-05	3.19 E-04
Hexane				EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	1.75 E-03	7.65 E-03
Indeno(1,2,3-cd)pyrene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.75 E-09	7.65 E-09
Manganese				EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	3.69 E-07	1.62 E-06
Mercury				EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07	2.52 E-07	1.11 E-06
Methane				EPA 42 Table 1.4-2	2.30	0.00225	2.23 E-03	9.78 E-03
Molybdenum				EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	1.07 E-06	4.68 E-06
Naphthalene				EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	5.92 E-07	2.59 E-06
Nickel				EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	2.04 E-06	8.93 E-06
Pentane				EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	2.52 E-03	1.11 E-02
Phenanathrene				EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	1.65 E-08	7.23 E-08
Propane				EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	1.55 E-03	6.80 E-03
Pyrene				EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	4.85 E-09	2.13 E-08
Selenium				EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	2.33 E-08	1.02 E-07
Toluene				EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	3.30 E-06	1.45 E-05
Vanadium				EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	2.23 E-06	9.76 E-06
Zinc				EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	2.81 E-05	1.23 E-04

Notes:

1 Emission factor for "Small Boilers" and "Uncontrolled".
2 Actual hours of operation of boilers (all year) = 365 days/year x 24 hours/day = 8,760 hours/year
3 Boilers used all year for domestic hot water.
4 Identifier #B34.

Abbreviations used::

MMBtu Million Btu
hr Hours
yr Years
lb_E Pounds of emissions
ton_E Tons of emissions

Emissions ISU Small Equip 6/24/2003
B34 1 of 1 @2:57PM
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Item #36: Boilers

Emission Estimates

Date: 01-Jul-04

(Listed as item #36 on the "Campus Inventory" list).

Location: Holt Arena Building #60

EMISSIONS	Fuel	Maximum Equipment Capacity		EMISSION ESTIMATES Emission Factors from EPA 42:			following estimates based on Emission Factors	
				Reference Table		calculated	calculated	calculated
	Gas	Total of 2 boilers;	MMBtu/hr 0.236		$lb_E/10^6$ scf	lb_E/MMBtu	lb_E/hr	ton_E/yr
CO		fuel input:		EPA 42 Table 1.4-1	84	0.082	1.94 E-02	8.51 E-02
NO_x		=0.275+0.197		EPA 42 Table 1.4-1	100	0.098	2.31 E-02	1.01 E-01
SO_2		=0.472 MMBtu/hr		EPA 42 Table 1.4-2	0.60	0.00059	1.39 E-04	6.08 E-04
PM10		and at a		EPA 42 Table 1.4-2	7.60	0.0075	1.76 E-03	7.70 E-03
PM		firing rate of 50%		EPA 42 Table 1.4-2	7.60	0.0075	1.76 E-03	7.70 E-03
Pb		=50%x0.475=0.236		EPA 42 Table 1.4-2	0.0005	4.90 E-07	1.16 E-07	5.07 E-07
VOC		=0.236 MMBtu/hr		EPA 42 Table 1.4-2	5.50	0.005	1.27 E-03	5.57 E-03
TOC				EPA 42 Table 1.4-2	11.00	0.011	2.55 E-03	1.11 E-02
2-Methylnaphthalene				EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	5.55 E-09	2.43 E-08
3-Methylchloranthrene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	4.16 E-10	1.82 E-09
7,12-Dimethylbenz(a)anthracene				EPA 42 Table 1.4-3	1.6 E-05	1.57 E-08	3.70 E-09	1.62 E-08
Acenaphthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	4.16 E-10	1.82 E-09
Acenaphthylene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	4.16 E-10	1.82 E-09
Anthracene				EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	5.55 E-10	2.43 E-09
Arsenic				EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	4.63 E-08	2.03 E-07
Barium				EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	1.02 E-06	4.46 E-06
Benzo(a)anthracene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	4.16 E-10	1.82 E-09
Benzene				EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	4.86 E-07	2.13 E-06
Benzo(a)pyrene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	2.78 E-10	1.22 E-09
Benzo(b)fluoranthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	4.16 E-10	1.82 E-09
Benzo(g,h,i)perylene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	2.78 E-10	1.22 E-09
Benzo(k)fluoranthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	4.16 E-10	1.82 E-09
Beryllium				EPA 42 Table 1.4-4	1.2 E-05	1.18 E-08	2.78 E-09	1.22 E-08
Butane				EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	4.86 E-04	2.13 E-03
Cadmium				EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	2.55 E-07	1.11 E-06
Chromium				EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	3.24 E-07	1.42 E-06
Chrysene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	4.16 E-10	1.82 E-09
Cobalt				EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	1.94 E-08	8.51 E-08
Copper				EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	1.97 E-07	8.61 E-07
Dibenzo(a,h)anthracene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	2.78 E-10	1.22 E-09
Dichlorobenzene				EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	2.78 E-07	1.22 E-06
Ethane				EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	7.17 E-04	3.14 E-03
Fluoranthene				EPA 42 Table 1.4-3	3.0 E-06	2.94 E-09	6.94 E-10	3.04 E-09
Fluorene				EPA 42 Table 1.4-3	2.8 E-06	2.75 E-09	6.48 E-10	2.84 E-09
Formaldehyde				EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	1.74 E-05	7.60 E-05
Hexane				EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	4.16 E-04	1.82 E-03
Indeno(1,2,3-cd)pyrene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	4.16 E-10	1.82 E-09
Manganese				EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	8.79 E-08	3.85 E-07
Mercury				EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07	6.02 E-08	2.63 E-07
Methane				EPA 42 Table 1.4-2	2.30	0.00225	5.32 E-04	2.33 E-03
Molybdenum				EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	2.55 E-07	1.11 E-06
Naphthalene				EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	1.41 E-07	6.18 E-07
Nickel				EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	4.86 E-07	2.13 E-06
Pentane				EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	6.02 E-04	2.63 E-03
Phenanthrene				EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	3.93 E-09	1.72 E-08
Propane				EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	3.70 E-04	1.62 E-03
Pyrene				EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	1.16 E-09	5.07 E-09
Selenium				EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	5.55 E-09	2.43 E-08
Toluene				EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	7.87 E-07	3.45 E-06
Vanadium				EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	5.32 E-07	2.33 E-06
Zinc				EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	6.71 E-06	2.94 E-05

Notes:

1. Emission factor for "Small Boilers" and "Uncontrolled".
2. Potential hours of operation of boiler (annual) = 8,760 hours/year
3. Actual hours of operation of boilers (all year) = 365 days/year x 14 hours/day = 5,110 hours/year
4. Boilers used all year for domestic hot water.
5. Identifier #B35.

Abbreviations used::

- MMBtu Million Btu
- hr Hours
- yr Years
- lb_E Pounds of emissions
- ton_E Tons of emissions

Emissions ISU Small Equip 6/24/2003
B35 1 of 1 @2:57PM
Syed

Item #37: Boiler #4 HP4

Listed as item #37 on the Campus Inventory List.

Emission Estimates

Date: 20-Dec-04

Fuel: Natural Gas

Computer Model Identifier: HP4

Location: Heat Plant - Building #20

Equipment EMISSIONS	Fuel	Maximum Equipment Capacity[3]		EMISSION ESTIMATES Emission Factors from EPA 42: Reference Table			following estimates based on Emission Factors	
						calculated	calculated	calculated
		lb_s/hr	MMBtu/hr		$lb_s/10^6$ scf	lb_s/MMBtu	lb_s/hr	ton_s/yr
Boiler 4	Gas	69,000	72.84					
CO				EPA 42 Table 1.4-1[1]	84	0.082	6.00 E+00	1.97 E+01
NO_x				EPA 42 Table 1.4-1[1]	50	0.049	3.57 E+00	1.17 E+01
SO_2				EPA 42 Table 1.4-2	0.60	0.00059	4.28 E-02	1.40 E-01
PM10				EPA 42 Table 1.4-2	7.60	0.0075	5.43 E-01	1.78 E+00
PM				EPA 42 Table 1.4-2	7.60	0.0075	5.43 E-01	1.78 E+00
Pb				EPA 42 Table 1.4-2	0.0005	4.90 E-07	3.57 E-05	1.17 E-04
VOC				EPA 42 Table 1.4-2	5.50	0.005	3.93 E-01	1.29 E+00
TOC				EPA 42 Table 1.4-2	11.00	0.011	7.86 E-01	2.57 E+00
2-Methylnaphthalene				EPA 42 Table 1.4-3	2.4 E-05	2.35 E-08	1.71 E-06	5.61 E-06
3-Methylchloranthrene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.29 E-07	4.21 E-07
7,12-Dimethylbenz(a)anthracite				EPA 42 Table 1.4-3	1.6 E-06	1.57 E-09	1.14 E-06	3.74 E-06
Acenaphthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.29 E-07	4.21 E-07
Acenaphthylene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.29 E-07	4.21 E-07
Anthracene				EPA 42 Table 1.4-3	2.4 E-06	2.35 E-09	1.71 E-07	5.61 E-07
Arsenic				EPA 42 Table 1.4-4	2.0 E-04	1.96 E-07	1.43 E-05	4.68 E-05
Barium				EPA 42 Table 1.4-4	4.4 E-03	4.31 E-06	3.14 E-04	1.03 E-03
Benzo(a)anthracene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.29 E-07	4.21 E-07
Benzene				EPA 42 Table 1.4-3	2.1 E-03	2.06 E-06	1.50 E-04	4.91 E-04
Benzo(a)pyrene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	8.57 E-08	2.81 E-07
Benzo(b)fluoranthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.29 E-07	4.21 E-07
Benzo(g,h,i)perylene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	8.57 E-08	2.81 E-07
Benzo(k)fluoranthene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.29 E-07	4.21 E-07
Beryllium				EPA 42 Table 1.4-4	1.2 E-05	1.18 E-08	8.57 E-07	2.81 E-06
Butane				EPA 42 Table 1.4-3	2.1 E+00	2.06 E-03	1.50 E-01	4.91 E-01
Cadmium				EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	7.86 E-05	2.57 E-04
Chromium				EPA 42 Table 1.4-4	1.4 E-03	1.37 E-06	1.00 E-04	3.28 E-04
Chrysene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.29 E-07	4.21 E-07
Cobalt				EPA 42 Table 1.4-4	8.4 E-05	8.24 E-08	6.00 E-06	1.97 E-05
Copper				EPA 42 Table 1.4-4	8.5 E-04	8.33 E-07	6.07 E-05	1.99 E-04
Dibenzo(a,h)anthracene				EPA 42 Table 1.4-3	1.2 E-06	1.18 E-09	8.57 E-08	2.81 E-07
Dichlorobenzene				EPA 42 Table 1.4-3	1.2 E-03	1.18 E-06	8.57 E-05	2.81 E-04
Ethane				EPA 42 Table 1.4-3	3.1 E+00	3.04 E-03	2.21 E-01	7.25 E-01
Fluoranthene				EPA 42 Table 1.4-3	3.0 E-06	2.94 E-09	2.14 E-07	7.02 E-07
Fluorene				EPA 42 Table 1.4-3	2.8 E-06	2.75 E-09	2.00 E-07	6.55 E-07
Formaldehyde				EPA 42 Table 1.4-3	7.5 E-02	7.35 E-05	5.36 E-03	1.75 E-02
Hexane				EPA 42 Table 1.4-3	1.8 E+00	1.76 E-03	1.29 E-01	4.21 E-01
Indeno(1,2,3-cd)pyrene				EPA 42 Table 1.4-3	1.8 E-06	1.76 E-09	1.29 E-07	4.21 E-07
Manganese				EPA 42 Table 1.4-4	3.8 E-04	3.73 E-07	2.71 E-05	8.89 E-05
Mercury				EPA 42 Table 1.4-4	2.6 E-04	2.55 E-07	1.86 E-05	6.08 E-05
Methane				EPA 42 Table 1.4-2	2.30	0.00225	1.64 E-01	5.38 E-01
Molybdenum				EPA 42 Table 1.4-4	1.1 E-03	1.08 E-06	7.86 E-05	2.57 E-04
Naphthalene				EPA 42 Table 1.4-3	6.1 E-04	5.98 E-07	4.36 E-05	1.43 E-04
Nickel				EPA 42 Table 1.4-4	2.1 E-03	2.06 E-06	1.50 E-04	4.91 E-04
Pentane				EPA 42 Table 1.4-3	2.6 E+00	2.55 E-03	1.86 E-01	6.08 E-01
Phenanathrene				EPA 42 Table 1.4-3	1.7 E-05	1.67 E-08	1.21 E-06	3.96 E-06
Propane				EPA 42 Table 1.4-3	1.6 E+00	1.57 E-03	1.14 E-01	3.74 E-01
Pyrene				EPA 42 Table 1.4-3	5.0 E-06	4.90 E-09	3.57 E-07	1.17 E-06
Selenium				EPA 42 Table 1.4-4	2.4 E-05	2.35 E-08	1.71 E-06	5.61 E-06
Toluene				EPA 42 Table 1.4-3	3.4 E-03	3.33 E-06	2.43 E-04	7.95 E-04
Vanadium				EPA 42 Table 1.4-4	2.3 E-03	2.25 E-06	1.64 E-04	5.38 E-04
Zinc				EPA 42 Table 1.4-4	2.9 E-02	2.84 E-05	2.07 E-03	6.78 E-03

Notes:

1. Emission factor for "Small Boilers", "Controlled - Low NO_x burners".
2. Hours of operation of boiler (heating season: Sept 1 to May 31) = 273 days/year x 24 hours/day = 6,552 hours/year
3. Primary operating fuel = Natural Gas, and secondary (backup) fuel = #2 Oil
   From boiler specifications: design heat input = 72.84 MMBtu/hr (gas), and 69.83 MMBtu/hr (oil).
4. Computer Model Identifier: HP4
5. Stack Parameters:
6. Stack height (ft) = 39.00
7. Stack diameter (ft) = 6.00
8. Exit temperature (F) = 323
9. Exit flowrate (acfm) = 21,000
10. UTM X Coordinate (m) = 383,056
11. UTM Y Coordinate (m) = 4,745,897
12. Base elevation (m) = 1,365.2

Abbreviations used::

lb_s Pounds of steam
MMBtu Million Btu
hr Hours
yr Years
lb_s Pounds of emissions
ton_s Tons of emissions

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